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APRIL, 1941

EDITORIAL.

Rice Production in 1941.

In this number we publish our annual review concerning the production and consumption of rice in Malaya. The figures reveal a satisfactory increase in the planted area, especially in the Unfederated Malay States, which was not, however, reflected in an increased yield. In our review last year we anticipated that the yield in this season would be less and stated that it might, in fact, be as much as 7 per cent. below the figure for the season 1938-39. Actually, the drop in yield amounted to only 1.8 per cent., which, in view of the adverse weather conditions in some parts of the country, may be considered as satisfactory. The increase in the area planted, rather than the yield per acre, is responsible for the smallness of the decrease in total production.

The combined efforts of the Agricultural Service and the Drainage and Irrigation Department in the development of new areas are being continued; the former examines and advises regarding soils before the latter puts on the water. The investigations of the Agricultural Service to increase the yield per acre by improved seed and better cultural operations are being continued in various parts of the country; their efforts, backed as they are by the greater interest in rice production taken by the cultivators themselves will inevitably result in the steady increase in production, which in any year of particularly favourable weather conditions may result in a new high level of production.

The increased cost of imported rice and the element of uncertainty regarding future supplies reacts favourably on local production by making rice growing more remunerative. Based on the declared trade value of rice imports, the value of the Malayan crop in the season under review exceeded $26\frac{1}{2}$ million, an increase of over $5 million, or over $6 per planted acre. We regard these figures as important in that they are likely to prove an added incentive to the cultivator to plant up every available acre, and to employ all his knowledge and industry to ensure the heaviest crop possible.

Lime for Coconuts.

The efficacy of lime in Malayan agriculture has for long been a debatable subject due perhaps in part to the lack of exact data and in part to the varying soil conditions in different parts of the country. So far as coconuts between the ages of 10 and 20 years are

concerned we published an article in 1934* in which it was shown that on "normal" soils liming is unlikely to increase the yield of coconuts to an economic degree. In the article in question it was emphasized that this conclusion applied to normal areas of coconuts from 10 to 20 years old on not over-drained land. These precautionary remarks are in no way intended to belittle the value of experiment, but are necessary to emphasize that the practical application of an investigation should be limited to areas which may be considered to be suffering from the same limitations as those on which the experiment was conducted.

Cases in point are provided by the results referred to above and by the experiment described in this number which proved that an application of half a ton of lime per acre resulted in an increase in yield of good coconuts, a decrease in the number of dumb nuts and an increase in the weight of copra per nut, and that the effect of the lime lasted over 5 years.

The reader is invited to examine the conditions under which this experiment was conducted before deciding whether similar results may be expected by similar treatment in areas under his charge. The area was coastal clay on which was a stand of mature coconuts the yields from which had been decreasing for some years. The drains contained black water, and a black sulphurous ooze entered the water through cracks in the soil at about 6 ins. below top soil level. While the action of lime under these conditions certainly had the effect of greatly improving yield, it is suggested that this was not by its action in neutralizing free acidity, but probably by overcoming aluminium toxicity. If this hypothesis is proved as a result of further work it will show that the planter must look for the presence of an unduly high percentage of soluble aluminium salts in the soil as a reason for liming rather than for the presence of excessive acidity.

Sun-Scorch of Tea.

Investigations of branch canker of tea at Cameron Highlands have led to the conclusion that the trouble is caused by sun-scorch, following major pruning of the bushes. This subject is discussed in an article on another page in which the author suggests that the cankers may be avoided by controlled shade of the bushes. Whether this may be effected by shade trees, or by laying the prunings on the bushes until the new growth commences is a matter for further investigation. The planter, however, is offered evidence that the trouble may be expected on slopes which receive the direct rays of the sun during the hottest part of the day. While actual treatment of canker of this type is impracticable, should the incidence of canker assume alarming proportions consideration must be given to the provision of more adequate shade to the crop.

* Experiments on the Cultivation and Manuring of Coconuts in Malaya, by W. N. C. Belgrave and J. Lambourne *Malayan Agricultural Journal*, Vol. XXII No. 11.

Original Articles.

RESULTS OF A MANURIAL EXPERIMENT ON COCONUTS

By
R. G. H. Wilshaw,
Senior Chemist (Soils).

Towards the end of 1933 a manurial experiment was initiated on an area of 1½ acres of mature coconuts on Jugra Land and Carey Ltd. For some years previously yields had been decreasing on the area and the quality of copra had been deteriorating.

In November 1932, reporting on the Division, the Chemist, Coconut Products, wrote *inter alia*: "Block V first commenced to show a decline in yield in 1923, 5 years after it came into bearing, and in 10 years the shortage has amounted to 3,500 nuts per acre. The average number of nuts required to make a picul of copra in 1922 was 218 for the whole Division against about 260 now. In particular the nuts from Block V have been so small that 290 are now required for a picul of copra." Referring to soil conditions the report added: "the drains contained black water. A black sulphurous ooze enters the water through cracks in the soil situated at about 3 ft. 6 ins. below top soil level."

Analyses of representative soil samples taken in 1933 from this Division are given in Table I.

Table I.

Analytical Data of Soils from Poor Area Block V, 1933.

Depth	Percentage on Oven-Dry Soil								pH	Available P_2O_5 ppm.*
					Hydrochloric Acid Extraction					
	Clay	Silt	Fine Sand	N_2	CaO	MgO	P_2O_5	K_2O		
ins. 6	36	17	45	0.20	0.03	0.08	0.058	0.43	3.9	113
18	42	12	43	0.13	0.03	0.09	0.042	0.50	3.7	33
24	48	11	35	0.14	0.03	0.09	0.030	0.61	3.5	23
36	59	8	26	0.16	0.03	0.16	0.034	0.70	3.5	20
48	59	8	22	0.16	0.03	0.21	0.036	0.79	—	35

* parts per million.

In conjunction with Imperial Chemical Industries (Malaya) Ltd., and with the helpful collaboration of the estate a manurial experiment on the following lines was laid down in October 1933.

Locality. Carey Island Division 5. Block V, Fields 4 and 5.
Area. Total area including guard rows: 12½ acres.
Soil. Coastal clay.
Date of Planting. 1912-13.
Distance of Planting. 30 ft. x 30 ft. square, 48 palms per acre.
Lay-out. 5-way Latin Square, 20 experimental palms per plot.

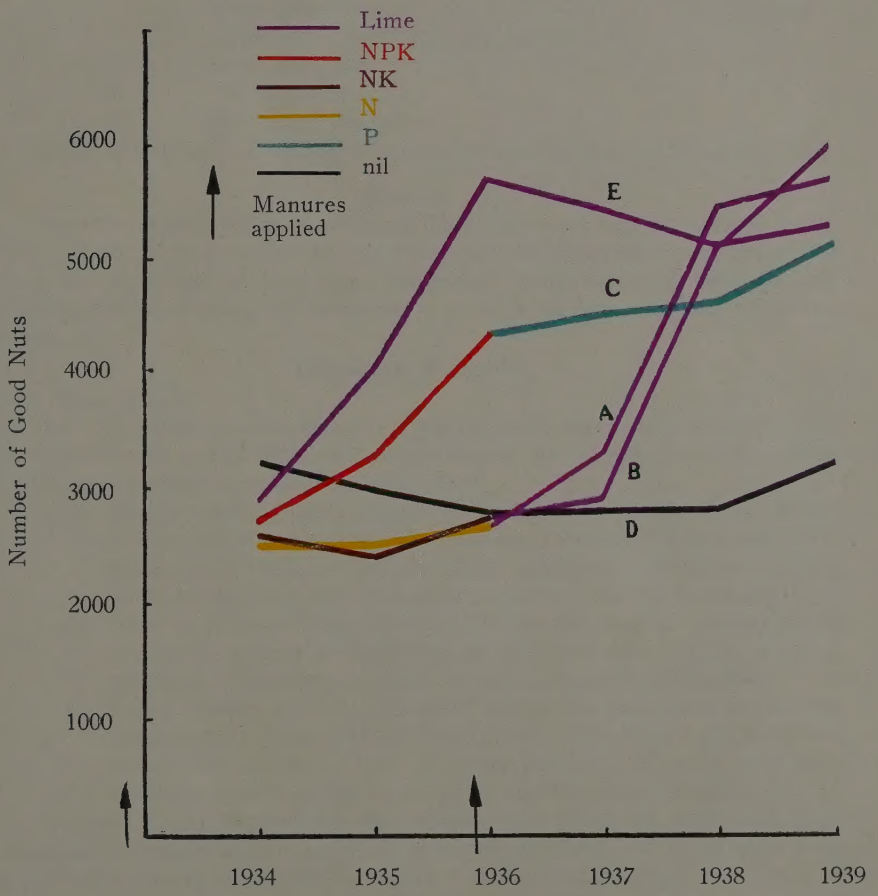
1 B	2 A	3 D	4 C	5 E
6 A	7 C	8 E	9 D	10 B
11 D	12 B	13 C	14 E	15 A
16 E	17 D	18 A	19 B	20 C
21 C	22 E	23 B	24 A	25 D

Treatments.

First Phase.		cwts. per acre.
A	Nitrochalk - - -	2
	(N 15.5 per cent., $CaCO_3$ 51 per cent.)	
B	Nitrochalk - - -	2
	Kainit - - -	2
	(K_2O 20 per cent.)	
C	Nitrochalk - - -	2
	Kainit - - -	2
	Rock phosphate - - -	3
	(Gafsa, P_2O_5 28 per cent.)	
D	No treatment	
E	Lime - - -	½ ton

Figure 1.

ANNUAL YIELD OF GOOD NUTS.



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Single applications of the above treatments were applied in October 1933. At this time there was a heavy growth of cover over most of the area, which was removed by light ploughing. The manures were spread by hand and subsequently lightly incorporated into the soil.

Second-Phase.		per acre.
A	Lime - - -	1 ton
B	Lime - - -	½ ,,
	Rock phosphate - - -	3 cwts.
	(Christmas Island, P_2O_5 38 per cent.)	
C	Rock phosphate - - -	3 ,,
D	No treatment	
E	No further treatment	

Single applications of the above treatments were applied in November 1936.

Records.

Separate monthly yields of good and dumb nuts were kept for each of the 25 plots. Every six months the nuts from each plot for that month were made into copra and the weight of dried copra determined. Individual plot yields are not published but a summary of the records is given in the accompanying tables and graphs.

Discussion of Results.

First Phase 1934-37.

The first phase may be taken as extending from the commencement of the experiment to the end of 1937, after which time the effects of the dressings applied for the second phase were commencing to show.

(a) *Number of Good Nuts.* Figure I and Table II show clearly the effects of the various treatments. The increases following the lime and NPK treatments in 1936 and 1937 are highly significant. The differences between the lime and NPK treatments, however, are not significant.

(b) *Number of Dumb Nuts.* Tables II(b) and III show the striking reduction in the number of dumb nuts on the limed plots. There is also a reduction, though not so great, of such nuts on the NPK plots.

(c) *Copra Content of Nuts.* Table IV shows the progressive increase in meat content of nuts from the limed plots. The effect of this is demonstrated very clearly in Table V, where the estimated copra yield from the limed plots is greatly in excess of that from the NPK plots.

In brief it may be concluded that whereas both limed and NPK plots have responded in respect of the number of good nuts produced, the limed plots have established a definite superiority by reason of the increase in weight of copra.

Second Phase 1937-39.

In view of the results obtained over the first period, a fresh series of treatments was given in November 1936. Lime was applied to the series of plots that had not previously received it, and the original limed plots were left untreated to ascertain the duration of the effect. Potassium and nitrogen were not applied as these two elements appeared to have had little effect.

(a) *Number of Good Nuts.* The effect of lime is shown again in Figure I by the rapid rise in the number of good nuts on the A and B plots. The original limed plots have maintained their yield and the yields of all treatments in 1938 and 1939 are significant over the control.

(b) *Number of Dumb Nuts.* There is again a striking reduction in the number of dumb nuts following the application of lime. The former limed plots show no signs of falling back and a steady drop in number of dumb nuts seems to be assocated with the application of phosphate.

(c) *Copra Content of Nuts.* As in the first phase of the experiment there is a sudden rise in the copra content of the nuts following the application of lime.

In brief it may be concluded that the second phase of the experiment has confirmed the beneficial effect of the application of lime, and shown that phosphate will also produce certain improvements.

Table II.

Total Number of Nuts Harvested per annum from Five Plots of each Treatment.

Year	Treatment					Total
	A	B	C	D	E	
			(a) Good Nuts.			
1934	2,547	2,653	2,752	3,232	2,956	14,140
1935	2,539	2,476	3,319	3,000	4,045	15,379
1936	2,712	2,753	4,461	2,812	5,714	18,452
1937	3,318	2,923	4,599	2,848	5,468	19,156
1938	5,481	5,098	4,688	2,872	5,120	23,259
1939	5,718	5,999	5,186	3,231	5,306	25,440
			(b) Dumb Nuts.			
1934	332	521	480	451	315	2,099
1935	279	332	391	360	129	1,491
1936	297	392	378	472	50	1,589
1937	322	341	320	516	44	1,543
1938	80	105	155	361	36	737
1939	44	36	117	351	41	589
			(c) Total Nuts.			
1934	2,879	3,174	3,232	3,683	3,271	16,239
1935	2,818	2,808	3,710	3,360	4,174	16,870
1936	3,009	3,145	4,839	3,284	5,764	20,041
1937	3,640	3,264	4,919	3,364	5,512	20,699
1938	5,561	5,203	4,843	3,233	5,156	23,996
1939	5,762	6,035	5,303	3,582	5,347	26,029

Figure 2.

ESTIMATED ANNUAL COPRA YIELDS PER ACRE (48 PALMS).

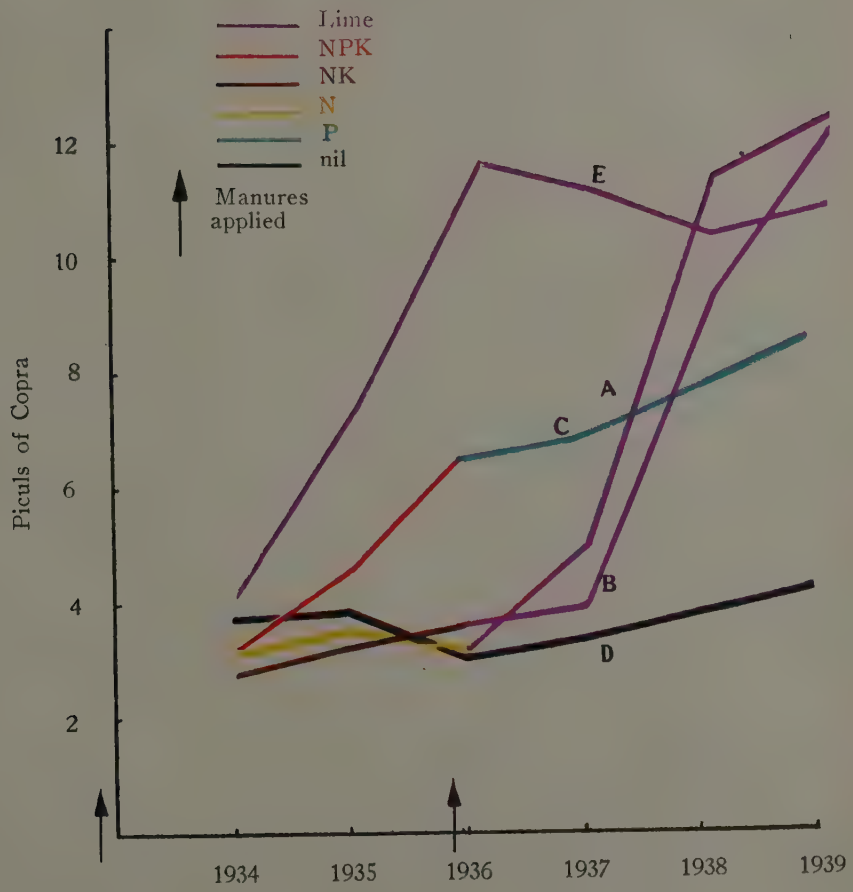

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Table III.
Dumb Nuts as Percentages of Total Nuts.

Year	Treatment				
	A	B	C	D	E
1934 ...	11.5	16.4	14.9	12.2	9.6
1935 ...	9.9	11.8	10.5	10.7	3.1
1936 ...	9.9	12.4	7.8	14.4	0.8
1937 ...	8.8	10.4	6.5	15.3	0.8
1938 ...	1.4	2.0	3.2	11.2	0.7
1939 ...	0.7	0.6	2.2	9.8	0.7

Table IV.
Average Weight of Copra per Nut.

lbs.

Year	Treatment				
	A	B	C	D	E
1934 ...	0.35	0.31	0.33	0.33	0.38
1935 ...	0.39	0.37	0.38	0.36	0.51
1936 ...	0.33	0.36	0.40	0.31	0.57
1937 ...	0.42	0.38	0.41	0.33	0.57
1938 ...	0.58	0.51	0.46	0.38	0.57
1939 ...	0.61	0.57	0.47	0.37	0.58

Table V.
Estimated Annual Yields of Copra per acre.

(derived from Tables II and IV)

piculs.

Year	Treatment				
	A	B	C	D	E
1934 ...	3.2	3.0	3.3	3.8	4.0
1935 ...	3.6	3.3	4.5	3.9	7.4
1936 ...	3.2	3.6	6.4	3.1	11.6
1937 ...	5.0	4.0	6.8	3.4	11.2
1938 ...	11.5	9.4	7.7	3.9	10.5
1939 ...	12.6	12.3	8.7	4.3	11.1

Table VI.

Average pH (1940)—Glass Electrode.

Depth	Treatment									
	A		B		C		D		E	
	Susp.	Soln.	Susp.	Soln.	Susp.	Soln.	Susp.	Soln.	Susp.	Soln.
ins.										
0— 6 ...	4.7	5.6	4.8	6.3	4.5	5.8	4.7	5.6	4.4	5.5
6—18 ...	4.3	6.1	4.3	5.9	4.3	5.8	4.2	5.5	4.1	5.8
18—30 ...	3.7	5.5	3.7	4.8	3.8	5.5	4.2	5.4	4.0	6.0
30—36 ...	3.2	3.9	3.6	4.7	3.2	3.9	3.5	4.8	3.4	4.1

General.

As stated previously, in 1922 it was calculated that in this Division 218 nuts were required to make a picul of copra. In 1932 in the particular Block on which this experiment was carried out about 290 nuts were required to make a picul of copra; this is equivalent to a copra weight of 0.46 lbs. per nut. The first records from the actual experimental area show that the average copra weight was rather less than this, about 0.34 lbs. per nut. By 1939 the copra weight from all the limed plots had risen to approximately the same value, 0.59 lbs. per nut, which is equivalent to 226 nuts per picul of copra; thus the palms were on a par with their condition in 1922 on a copra per nut basis.

The mechanism of the action of lime in bringing about such an improvement in the yield of nuts and copra is not certain. There are at least three possibilities as to its action. It may

(a) act as a base and neutralize free acidity in the soil,

(b) counteract the effect of "active" toxic aluminium,

(c) improve the tilth and thus the drainage and aeration of the soil.

In regard to (a) the development of free sulphuric acid in this type of soil is a well known occurrence(1). When acidity of this nature is present the fact is shown by the particularly high acidity of the soil solution.

In Table I are given the pH values of soil suspensions from this Division but not from the actual experimental plots. In Table VI are given the mean pH values of soil suspensions and solutions from the experimental plots at the end of 1939. As the location differs no real comparison can be drawn between the two

tables. The figures in Table VI show no general effect of the lime dressings in neutralizing free acidity — in fact the unlimed plots (D) are if anything less acid — and the pH values for the lower depths of the central plots do not indicate the presence of free sulphuric acid.

In regard to (b), previous observations have shown a high content of soluble aluminium salts in soils of this nature(1). Many investigators have shown that aluminium toxicity may often be overcome by either liming or by the application of phosphate dressings. The response of the phosphate-treated plots in this experiment (C) therefore supports the hypothesis that the initial trouble was aluminium toxicity.

The failure to obtain any response to the dressings of nitrochalk, which has a composition approximating to 44.3 per cent. ammonium nitrate and 51 per cent. calcium carbonate (29 per cent. of lime), may well be due to the very small amount of calcium available compared to the lime dressings. As regards calcium content, a dressing of 2 cwts. of nitrochalk is equivalent to one of only approximately 65 lbs. of lime.

The investigation of the hypothesis of aluminium toxicity on these soils will be continued at a later date.

Summary.

The effect of lime dressings alone in increasing the yield of good nuts, decreasing the number of dumb nuts, and increasing the weight of copra per nut has been clearly demonstrated in a case of poor mature coconuts growing on coastal clay.

No differences could be detected between the effects of dressings of $\frac{1}{2}$ and 1 ton of lime per acre.

The effect of lime is apparently not due to calcium ion.

The effect of a single dressing of $\frac{1}{2}$ ton lime per acre had effects lasting over 5 years.

A certain response to phosphate manuring has been demonstrated, the response being in the number of nuts produced rather than in any increase in copra content, though a certain increase in this respect was obtained.

Reference.

1. Wilshaw, R.G.H. — A Note on the Development of High Acidity in Certain Coastal Clay Soils of Malaya. *Malayan Agricultural Journal,* Vol. XXVIII, No. 8, August, 1940, page 352.

Received for publication 1st February, 1941

BRANCH CANKER OF TEA

By
A. Thompson,
Senior Plant Pathologist.

A canker of the branches of tea bushes was reported from Cameron Highlands in 1940 on an area undergoing pruning for the second time.

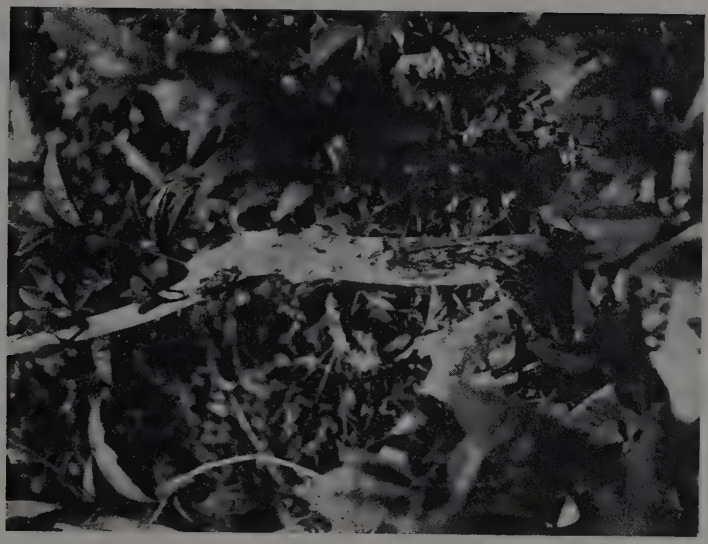
The cankers were of the type which affects the upper surface of horizontal branches and it was evident, from the amount of callus which had formed at the edges of the lesions and from the extent of decay of the exposed wood, that the cankers were not of recent origin. The lesions varied in size from about 2 to 6 ins. in length and from $\frac{1}{2}$ to $1\frac{1}{2}$ ins. in width. In some of the larger cankers the exposed wood was decayed to about $\frac{1}{2}$ in. in depth, was soft and tindery, and could sometimes be scraped out without much difficulty.

Types of branch canker of tea were first recorded in South India in 1899 and in Ceylon in 1904, and various fungi have been described as causal agents of different types(1). Splitting and cracking of the stems in every direction and eventual ringing of the bushes was attributed in India to a species of Nectria. Another type producing gnarled formations without much initial decay of the wood has been connected with attack by the pink disease fungus, *Corticium salmonicolor*. Petch in Ceylon considered that the fungus *Macrophoma theicola* was the cause of the death of elongated, oval areas of bark on young shoots or larger branches, as well as of a die-back which occasionally extended to the roots, and ascribed branch canker of the upper surface of horizontal branches to attack by this fungus.

Of the fungi mentioned above it is probable, however, that the pink disease fungus is the only one which can correctly be considered as a primary parasite. Work in recent years has shown that the conditions known as "die-back" or "Diplodia root disease" following pruning result from insufficient reserves of food and a consequent lowering of resistance in the tissues to invasion by fungi which normally do not attack healthy bushes, and Diplodia, in particular, is not now looked upon as a parasite.

Branch cankers, other than those caused by pink disease, and branch die-back may be expected to develop on tea bushes with low food reserves which have been subjected to the shock of pruning. The finding of fungi such as *M. theicola* or Nectria on the cankered bark does not necessarily mean that they are primary parasites and it is probable that, when they are present, they are secondary to some physiological disturbance in the metabolism of the affected bush.

In the case of the cankers which have been examined at Cameron Highlands there was no indication that pink disease had ever been present. Neither Nectria nor *M. theicola* was found on any of the bushes examined, and the only fungus which developed in culture from the margins of typical cankers was *Diplodia* sp.



Cankers on the Upper Surface of Horizontal Branches.

The fact that the cankers were invariably situated on the upper surface of horizontal branches suggested that sun-scorch of the bark might be considered as a factor associated with the incidence of the trouble.

When tea bushes are given a major pruning, branches normally shaded by the leaves are suddenly exposed to the heat of the sun, while, at the same time, the normal flow of sap in the bark is disturbed. In view of the observations made by Sharples(2) and Ward(3) on sun-scorch of exposed lateral roots of the rubber tree and the association of Diplodia with decay of the wood, leading to the formation of cankers during the period of wintering or of defoliation of the trees by mildew, it was considered that the cankers now present on the tea bushes at Cameron Highlands originated from sun-scorch received when the bushes were given their first pruning about three years ago. The development of new leaf and shoot growth and of callus around the dead wood would check any rapid progress of a fungus into the unscorched or less scorched tissues, leaving areas of dead wood bordered by callus thus forming typical cankers which, being concealed by the new leaves, might not be discovered until the bushes were again pruned. With regard to the presence of Diplodia in the tissues it has been shown by Ward (*loc. cit.*) that this fungus makes rapid headway in scorched tissue of Hevea.

Sharples (*loc. cit*) found that sun-scorch of rubber tree roots accompanied by Diplodia occurred mainly on slopes facing west which received the direct rays of the hot afternoon sun, and that, in individual trees, surface roots on the western side of the trunk were heavily affected, but those on the eastern side, which received shade from the main trunk in the afternoon, were hardly affected.

The tea bushes affected at Cameron Highlands are on a moderate slope mainly to the east and are exposed to overhead sun during the hottest time of the day. The branches are not shaded by the stem and it is not surprising to find the lesions occurring on the upper or most exposed surfaces.

Damage to young arecanut palms in Pahang in 1940 was also attributed by the writer to sun-scorch coupled with drought. The palms were affected, only on the western side of the stems, by cracking of the bark and an internal decay of the stem tissue. The fungi present in the stems (Diplodia, Thielaviopsis, Pestalozzia and *Fusarium* sp.) did not affect healthy stem tissue when tested by inoculation.

Diplodia is invariably present in the case of trees scorched by lightning, and, in the case of young rubber trees, can permeate the whole trunk in a few days. The association of this fungus with branch canker in the present instance on tea further supports the theory of sun-scorch as an important factor in the incidence of this type of disease.

Furthermore, according to a report(4) just received from India it is now considered at Tocklai that "there is little doubt that most of the branch canker in North-East India is associated with sun-scorch and is the result of the climatic conditions immediately following the time of pruning."

Treatment.

Direct treatment of cankers of this type is impracticable during the growth period which follows the first pruning since the cankers will not have developed until the bushes are again in leaf, and it is probable that, in healthy bushes, extension of the invading fungus is limited to the badly scorched area of bark. Experience in India and Ceylon indicates that branch canker has little immediate effect on yield and that treatment to remove cankers or cankered branches is only called for at a subsequent pruning if cankers have extended to the main stem. The cost and difficulty of cleaning out the dead wood from all cankers and of painting the clean wood with a protective dressing would render such operations uneconomic and it would appear that such treatment is, in many cases, neither needed nor advisable. The natural repair mechanism accompanied by callus formation may be expected to limit the damage in the majority of cases, and by taking steps to reduce the risk of a recurrence of the trouble at the next time of pruning further damage might be avoided.

If the assumption that sun-scorch is connected with the incidence of the trouble is accepted it should follow that branch canker would not be extensive in areas with overhead shade. While definite information on this point is not at present available it is suggested that the question of provision of controlled shade for affected areas should be given consideration or that a method of temporarily shading pruned bushes might be adopted. One such method which might be useful is to lay the prunings on top of the pruned bushes until new growth begins, taking care when removing the prunings not to injure the young developing leaves. The risk of injuring the new growth if removal of prunings is not carefully supervised may, however, mitigate against the adoption of this method.

Adjusting the time of pruning to coincide with a period of dull weather would of course be desirable, but in Malaya it is not possible to forecast that dull weather will be experienced, and dull days without brilliant sunshine until after midday are not frequent even in the wetter months of the year during which pruning operations are likely to be undertaken.

Summary.

1. The occurrence of cankers affecting the upper surface of horizontal branches of tea bushes at Cameron Highlands is recorded.

2. It is considered that the trouble is due to sun-scorch received when the bushes are pruned.

3. The question of treatment is discussed and it is suggested that prevention of scorch by providing overhead shade is likely to be the most satisfactory method of control.

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RICE IN MALAYA IN 1940

By
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Prices and Rice Control.

War conditions were responsible for a continuous upward trend of prices during 1940, the increase in wholesale prices in December 1940 as compared with December 1939 being as follows:— Thailand No. 2 (Ordinary) 56 per cent., Rangoon No. 1 36 per cent., Saigon No. 1 (Long Grain) 64 per cent. The average retail price of a gantang of rice in Singapore in December 1940 was 66 per cent. higher than in the corresponding month of 1939. Throughout the year both local wholesale and retail prices have been controlled by Government.

Immediately war broke out, steps were taken by the Food Control Administration in all parts of Malaya to control rice and padi. All dealers, large and small, were required to be licensed, and arrangements were made to control the prices of all varieties of imported rice. No attempt was made to control the prices of locally-milled rice until the end of 1940, when these varieties also were subject to control.

Towards the end of 1939, the Government of Perak undertook to guarantee a minimum price for padi at Government mills of $2.50 per picul for a period of three years. A guaranteed minimum price of $2 per picul was fixed by the Government of Kedah for 1940.

For the first six or eight months of the year the rice trade continued to operate normally, and prices were on the low side. Difficulties began shortly after the collapse of France in the middle of 1940, and steps were taken to safeguard the stock position in Malaya. Apart from Government purchases of rice and padi, Rice Pools were instituted in Singapore and in the Federated Malay States, and other devices were adopted by the Food Control Department for increasing stock levels.

Towards the end of 1940, there was a severe shortage of supplies from Thailand, which was overcome by Government purchases from various other sources of supply.

Under the Rice (Registration of Sales and Purchase) (Singapore) Order, 1940, which came into force on 16th September, 1940, private purchasers or consumers of rice in the Settlement of Singapore were required to register with a dealer as a purchaser of rice, and purchases were permitted at the following rates per month: adult male, 36 kati, adult female 27 kati, child under the age of 12 18 kati.

The average declared trade value of imports of rice during the year was $4.74 per picul, as compared with $3.75 in 1939, an increase of 26 per cent.

The details of wholesale and retail prices, as far as are available, are given in Table I.

Table I.
Average Prices of Rice in Malaya in 1940.

Month	Wholesale Prices of Rice Dollars per picul (133 1/3 lbs.)			Retail Prices of Rice Cents per gantang (gallon)			Price of Padi per Picul at Government Rice Mills, Perak.
	Thailand No. 2 (Ordinary)	Rangoon No. 1	Saigon No. 1 (Long Grain)	Singapore	Penang	Malacca	
January ...	4.99	4.77	4.52	30	32	30	†2.50
February ...	4.84	4.80	4.65	29	30½	‡	2.50
March ...	4.50	4.35	4.10	29	30½	‡	2.50
April ...	4.30	4.35	3.97	29	29	‡	2.50
May ...	4.29	4.55	4.07	28	29	‡	2.50
June ...	4.64	4.72	4.42	28	30½	‡	2.50
July ...	*	4.75	4.87	31	33½	‡	2.50
August ...	*	5.00	5.05	32	34½	‡	2.50
September ...	*	5.52	5.12	33	34½	‡	2.50
October ...	*	5.62	5.25	36	36	‡	2.50
November ...	*	6.00	5.75	38	36	‡	2.50
December ...	6.92	6.17	6.42	46½	‡	‡	2.50
Average 1940	4.93	5.05	4.85	33	‡	‡	†2.50
Average 1939	3.98	3.62	3.47	27	31	29	2.17
Average 1938	4.26	3.74	3.94	28	32	28	2.14
Average 1937	4.39	3.75	3.92	30	36	32	1.99
Average 1936	3.86	3.44	3.59	28	29	26	1.91

† Price guaranteed from January 1940. * No dealings. ‡ Not available.

Imports and Exports.

A statement of annual imports and exports of rice, excluding rice bran and meal and padi, is given in Table II. The net imports of rice in 1940 were 635,360 tons, of which 395,946 tons (62.3 per cent.) were from Thailand, 187,258 tons (29.5 per cent.) from Burma, 33,886 tons (5.3 per cent.) from French Indo-China and 18,270 tons (2.9 per cent.) from other countries.

The different grades of rice imported during 1940 were as follows (net imports only are given):— cargo rice 34,762 tons, parboiled 77,445 tons, white rice 460,328 tons, broken rice 62,825 tons, as compared with 38,208, 71,209, 460,145, and 89,091 tons respectively in 1939.

The total quantity of rice products imported for local consumption in 1940, including rice bran and rice meal of which 183,634 tons, valued at $5,303,926 were imported for consumption locally, amounted to 818,994 tons, valued at $56,200,076, as compared with 824,900 tons valued at $46,632,841 in 1939. The net imports of padi, which amounted to 17,862 tons, valued at $999,362, are not included in the above figures. Net imports of padi in 1939 were 51,912 tons, valued at $2,364,629.

Table II.

Rice: Malayan Imports and Exports.

Excluding Rice Bran and Meal and Padi.

Year	Imports		Exports		Net Imports	
	Tons	Value $	Tons	Value $	Tons	Value $
1929 ...	785,558	95,461,036	233,897	28,031,407	551,661	67,429,629
1930 ...	800,443	87,666,723	208,688	23,361,561	591,755	64,305,162
1931 ...	691,112	48,458,102	175,385	13,453,189	515,727	35,004,913
1932 ...	592,209	39,632,925	183,209	12,660,493	409,000	26,972,432
1933 ...	592,912	33,846,158	159,746	9,493,291	433,166	24,352,867
1934 ...	619,199	32,813,558	165,968	8,609,566	453,231	24,203,992
1935 ...	655,845	40,114,794	184,463	11,060,993	471,382	29,053,801
1936 ...	715,632	43,053,805	181,837	10,846,378	533,795	32,207,427
1937 ...	711,581	47,800,364	138,518	9,589,376	573,063	38,210,988
1938 ...	814,870	53,822,372	202,476	13,389,308	612,394	40,433,064
1939 ...	824,126	51,931,238	165,473	10,230,494	658,653	41,700,744
1940 ...	770,481	61,366,133	135,121	10,469,983	635,360	50,896,150

Areas and Yields.*

The continued efforts to increase the area under "wet" padi in Malaya is reflected in the greater area planted in the year under review. For the second successive year the area planted constituted a new high record, the increase in 1940 being 23,160 acres. Unfortunately, however, this increased area did not give a corresponding increase in yield. The prospects of the 1939-40 crop were discussed in the review a year ago†, when it was anticipated that, owing mainly to droughts in many parts of the country, the crop might possibly be 7 per cent. below the previous year's total, but that the deficiency might not reach this figure. The season was particularly bad in Malacca, Kedah, Selangor and Negri Sembilan, but favourable in the important rice-producing State of Kelantan. In consequence, the final figures showed that the decrease in yield over the previous year's figures — which was almost a record — was only 1.8 per cent.

The area planted was 727,550 acres of "wet" padi and 65,790 acres of "dry" padi, as compared with 704,390 and 48,850 acres respectively in the previous season. The main increases in "wet" area planted were in Perak, 5,000 acres, Pahang 4,000 acres, Johore 5,000 acres, Kedah 5,000 acres, Kelantan 13,000 acres, while the areas planted decreased by 9,000 acres in Selangor, and 5,000 acres in Negri Sembilan.

* Estimating the area and yields of padi presents great difficulty, and the following figures are therefore given with due reservations.

† Rice in Malaya in 1939. *Malayan Agricultural Journal*, Vol. XXVIII, No. 4.

Table III.
Areas and Yields of Padi.

Year	"Wet" Padi			"Dry" Padi			Total	
	Area Acres	Yield Gantangs	Gantangs per Acre	Area Acres	Yield Gantangs	Gantangs per Acre	Area Acres	Yield Gantangs
1929 - 30	629,650	103,624,000	164	27,550	3,160,000	114	657,200	106,784,000
1930 - 31	603,070	166,845,000	277	104,670	9,122,000	87	707,740	175,967,000
1931 - 32	635,130	184,631,000	291	89,850	12,472,000	139	724,980	197,103,000
1932 - 33	674,920	186,345,000	276	91,990	13,416,000	146	766,910	199,761,000
1933 - 34	691,110	215,098,000	311	74,140	9,389,000	127	765,250	224,487,000
1934 - 35	669,290	213,835,000	319	65,440	6,720,000	106	734,730	220,555,000
1935 - 36	674,900	219,786,000	325	50,150	8,087,000	161	725,050	227,873,000
1936 - 37	693,550	206,256,000	297	46,490	6,354,000	137	740,040	212,610,000
1937 - 38	682,120	193,240,000	283	44,550	6,020,000	135	726,670	199,260,000
1938 - 39	704,390	218,604,000	313	48,850	8,805,000	180	753,240	227,409,000
1939 - 40	727,550	212,037,000	291	65,790	11,165,000	170	793,340	223,202,000

(Acreage to nearest 10 acres : yields to nearest 1,000 gantangs)

"Dry" padi areas increased in most States, particularly in Perak, by 4,000 acres, Kelantan 5,000 acres, Trengganu 6,000 acres.

The production of "wet" padi in the season 1939-40 was 212,037,000 gantangs (gallons), equal to approximately 318,400 tons of rice, as compared with 218,604,000 gantangs, equal to about 328,200 tons of rice in the previous season. The "dry" land padi yield was 11,165,000 gantangs (about 16,700 tons rice) compared with 8,805,000 gantangs (about 13,200 tons) in the season 1938-39.

As stated earlier, estimating the area and yield of padi presents great difficulties, but in view of the fact that the very greatest care is taken in computing the figures, the statistics of any one year are comparable with previous seasons. The figures of yields per acre given in Table III, therefore, while liable to be inaccurate, show that the yield per acre for both "wet" and "dry" padi show a decline on previous years. The reason for this decline for "wet" padi must be ascribed to the unfavourable season. An average yield of 170 gantangs per acre of "dry" padi, while less than that recorded for the previous season, is above average.

Value of the 1939 - 40 Crop.

Owing to the rising price of rice, cultivators reaped a crop of record value during the year under review. Based on the declared trade value of imports of rice, which in 1939 averaged $3.75 per picul ($63 per ton) and in 1940 was $4.74 per picul ($79.53 per ton), the value of the 1939-40 crop was $26,654,000 as compared with $21,512,000 in the previous year, an increase in the season under review of over $5 million.

Consumption Compared with Production and Imports.

Owing to an apparent smaller consumption of rice (as estimated by the sum of local production and net imports) there was an improvement of 1 per cent. in

Table IV.
Area of Land Planted in Malaya and Yields of Padi
Season 1939-1940.

Territory	Wet		Dry		Total	
	Acres	Gantangs	Acres	Gantangs	Acres	Gantangs
F.M.S.—						
Perak ...	99,560	31,429,000	8,350	1,388,000	107,910	32,817,000
Selangor ...	7,140	2,180,000	280	61,000	7,420	2,241,000
N. Sembilan ...	29,770	8,122,000	80	7,000	29,850	8,129,000
Pahang ...	40,100	8,243,000	1,030	132,000	41,130	8,375,000
Total ...	176,570	49,974,000	9,740	1,588,000	186,310	51,562,000
S.S.—						
P. Wellesley ...	34,060	11,277,000	100	17,000	34,160	11,294,000
Penang ...	3,290	1,298,000	—	—	3,290	1,298,000
Malacca ...	30,710	5,194,000	—	—	30,710	5,194,000
Labuan ...	940	356,000	—	—	940	356,000
Total ...	69,000	18,125,000	100	17,000	69,100	18,142,000
U.M.S.—						
Johore ...	13,250	2,137,000	1,440	127,000	14,690	2,264,000
Kedah ...	261,860	88,287,000	2,960	469,000	264,820	88,756,000
Perlis ...	41,080	12,454,000	—	—	41,080	12,454,000
Kelantan ...	128,320	34,790,000	35,620	5,980,000	163,940	40,770,000
Trengganu ...	32,440	4,666,000	14,010	2,412,000	46,450	7,078,000
Brunei ...	5,030	1,604,000	1,920	572,000	6,950	2,176,000
Total ...	481,980	143,938,000	55,950	9,560,000	537,930	153,498,000
TOTAL MALAYA ...	727,550	212,037,000	65,790	11,165,000	793,340	223,202,000

Note:—Acreage to the nearest 10 acres. Yield to the nearest 1,000 gantangs.

Table V.

Area of Land Planted in Malaya and Yield of Rice.

Season	F.M.S.		S.S.		U.M.S.		Total	
	Area Acres	Production Rice Tons	Area Acres	Production Rice Tons	Area Acres	Production Rice Tons	Area Acres	Production Rice Tons
1929 - 30	174,466	55,577	67,005	25,944	415,727	78,815	657,198	160,335
1930 - 31	178,930	57,027	67,350	39,503	461,460	167,672	707,740	264,202
1931 - 32	194,580	67,658	67,980	39,626	462,420	188,664	724,980	295,948
1932 - 33	214,160	76,331	70,530	36,051	482,220	187,539	766,910	299,921
1933 - 34	195,690	78,835	70,550	44,180	499,010	214,053	765,250	337,068
1934 - 35	176,750	79,559	68,500	43,988	489,480	207,617	734,730	331,164
1935 - 36	178,020	78,011	67,750	37,818	479,280	226,321	725,050	342,150
1936 - 37	185,730	80,872	69,090	37,622	485,220	200,740	740,040	319,234
1937 - 38	176,880	68,185	67,650	33,853	482,140	197,152	726,670	299,190
1938 - 39	186,480	76,016	68,910	37,017	497,850	228,422	753,240	341,455
1939 - 40	186,310	77,420	69,100	27,240	537,930	230,478	793,340	335,138

(Yield estimated on a basis of 666 gantangs of padi = 1 ton of rice)

the percentage of production to consumption, a figure which is well within the probable error in this method of estimation. The fact remains, therefore, that Malaya was still unable materially to increase the percentage of local production to total consumption.

Table VI.

Malayan Production of Rice in Relation to Net Imports and Consumption 1930—1940.

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Net imports (tons)	591,755	515,727	409,000	433,166	453,229	474,955	533,795	573,063	612,394	658,653	635,360
Production (tons)	160,335	264,202	295,948	299,921	337,068	331,164	342,150	319,234	299,190	341,455	335,138
Consumption (tons)	752,090	779,929	704,948	733,087	790,297	806,119	875,945	892,297	911,584	1,000,108	970,498
Percentage of production to net imports	27	51	72	69	74	69	64	56	49	52	53
Percentage of production to consumption	21	34	42	41	43	41	39	36	33	34	35

Prospects for the 1940 - 41 Season.

The prospects for the 1940-41 season in the main areas of production were reviewed in the early part of 1941.

The most important areas of production are situated in the north of the Peninsula, in the States of Kedah, Kelantan, Perlis and Perak, about 73 per cent. of the area under padi being in these States.

Kedah anticipates that the area planted and the crop will be a little greater than last season. The crop in the neighbouring State of Perlis is reported to be normal, while in Kelantan and Trengganu a 5 per cent. increase in crop is anticipated if the weather remains favourable.

Rat damage in parts of Perak has been more severe than usual, while in parts of Krian late planting on account of unfavourable weather conditions will affect the crop. In some parts, however, the crop is above average so that the crop reaped should not be less than in the 1939-40 season.

In Selangor the crops are generally fair to good. Last year a large area was lost through the drought; this season the weather has been more favourable so that an area of about 25,000 acres may mature, yielding 5 million gantangs as compared with 7,420 acres yielding 2,241,000 gantangs in the previous season.

Negri Sembilan crop should be rather more than last year, while the Malacca crop should be greater than during the very unsatisfactory previous season.

Pahang areas and total yield are expected to be appreciably less than last season on account of unusually dry conditions, coupled with severe rat attacks in many parts. The emergency dry areas, however, are reported to have increased.

Johore has suffered by drought and rats and the area and crop are expected to be less.

An appreciable drop in production is expected in Brunei.

Rat damage has been heavier in all areas than normal, possibly on account of the long dry intercrop period which provided favourable conditions for this rodent.

Summing up the position, it would appear that the area planted this season will show an increase on last season's total although it is too early to indicate a figure for this increased planting. The total crop will almost certainly exceed 230 million gantangs, as compared with 223 million gantangs of padi in the season 1939-40.

Milling.

There are three Government Rice Mills in Perak, two in Krian and one at Teluk Anson. There is also a Government mill at Temerloh, Pahang. The Krian mills purchased a total of 18,262 tons of padi, all from Krian, and produced 73,258 bags of rice of 170 kati, of which 37,806 bags were white and undermilled rice, and 35,452 bags parboiled rice. The proportion of undermilled to ordinary white rice produced was 9 bags to 1 bag.

The Government Rice Mill, Teluk Anson, produced 11,308 bags of white and undermilled rice, and 10,219 bags of parboiled rice. The proportion of undermilled to white rice produced was 52 to 1,146 tons. A total of 635 tons of padi was purchased from the Sungei Manik Irrigation Area, and this might have been considerably larger had not the local price of padi increased, halfway through the harvest, to more than the price guaranteed by Government.

The Temerloh mill purchased 139 tons of padi during the year, and, including padi carried forward from 1939, produced 164 tons of white rice No. 1.

In Perak some 38 small power-driven rice mills were in operation. Generally the padi is not purchased but milled for the growers at the rate of $\frac{1}{2}$ gantang rice for every 10 gantangs padi milled, the miller in addition retaining the polishings resulting from milling.

In Kelantan the Tumpat mill remained the only one in the State. No padi was purchased locally, and the mill was engaged only on milling Government stocks of padi.

In Kedah there are 93 rice mills, excluding the newly constructed Government Rice Mill which did not operate until January 1941. Of these 93 mills, most of which are power driven, 23 are classed as large mills with a capacity of 60 to 360 bags of rice per 12 hour day.

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Abstract.

THE EXPORT CROPS OF THE NETHERLANDS INDIES IN 1939.

Annual Report No. 4 of the Central Bureau of Statistics of the Netherlands Indies.

The preparations for and the outbreak of war in Europe in September 1939 created abnormal conditions in the export of agricultural produce. Certain foreign publications now being unavailable, it has been impossible to obtain accurate figures for world production and/or world exports of some products, and, as far as possible, estimates have been substituted.

In 1939 the total value of all exports from the Netherlands Indies, exclusive of export duties, rose from Gs. 658 millions in 1938 to Gs. 746 millions, and that of all exports of agricultural products from Gs. 426 millions in 1938 to Gs. 495 millions. Of these Gs. 495 millions, Gs. 310 millions (62.6 per cent.) was estate produce and Gs. 185 millions (37.4 per cent.) was native produce.

Though the values of exports of both agricultural and mineral products have increased, the proportion, expressed as percentages of total exports, has changed slightly in favour of the former. For 1938 the figures were respectively 64.7 per cent. and 30.9 per cent.; for 1939 they were 66.4 and 29.9 per cent., which is more in conformity with the average figures of 68.36 and 26.18 per cent. for the last decade.

Expressed as percentages of total world exports of important agricultural products the 1939 exports from the Netherlands Indies were: cinchona 91 per cent., kapok 72 per cent., pepper 85 per cent., rubber 37 per cent., copra 27 per cent., sisal fibre 33 per cent., tea 19 per cent., and oil palm products 24 per cent.

Cane Sugar.

The area planted with pedigree cane to serve as planting material was 5,066 hectares*; the crop from 1,504 hectares of this area had to be milled. The total production of cane sugar was 1,562,462 tons† against 1,375,510 tons in 1938. The total exports were 1,357,666 tons against 1,071,089 tons in 1938; unsold stocks have in 1938-39 consequently increased by about 205,000 tons.

Native production for home consumption again increased; the planted area has steadily increased from 10,782 hectares in 1934 to 17,010 hectares in 1939.

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* 1 hectare = 2.472 acres.

† Throughout this abstract "ton" refers to the metric ton of 2,200 lbs.

Rubber.

The planted estate area was 615,627 hectares, 520,966 hectares of which were in bearing. A total of 17,870 hectares of old rubber was cut out and 36,412 hectares planted with superior material. Of the total area planted 201,780 hectares (32.8 per cent.) are budded rubber. Of this latter area 140,365 hectares (69.5 per cent.) were, according to revised figures, planted before 1935 and 61,415 hectares (30.5 per cent.) were planted in 1935/1939.

The native-owned area has now been calculated to be 16,048 hectares in Java and 697,810 hectares in the Outer Provinces. No figures are given of the tappable area, nor any indication of their productive capacity.

The basic quota for 1939 was 641,634 tons, of which 323,064 tons were allotted to estates and 318,570 tons to native producers.

Total exports in 1939 greatly increased, in comparison with those in 1938, owing to the increase in export allowances. They were:—

	Estates tons	Native tons	Total tons
	189,567	186,209	375,776
against allowances of: ...	189,767	187,022	376,789
Shortage ...	200	813	1,013

Though there was little room left for improvement in the native product, it did further improve slightly. The 1939 exports consisted of 98.3 per cent. blanket, 0.2 per cent. scrap, and 1.5 per cent. slab. In 1935 the corresponding percentages were 62.8, 1.4 and 35.8. The remilling factories exported 83,676 tons of native rubber.

Coffee.

The planted estate area was 99,167 hectares, 85,550 hectares (86¼ per cent.) of which are in Java (mostly East Java). The area of native-owned coffee in Java was 26,830 hectares; that of native-owned coffee in the Outer Provinces is unknown. The estate area has steadily declined from 123,128 hectares in 1934.

Estate production was 58,319 tons. The export of native-grown coffee from the Outer Provinces was 55,000 tons; 85.6 per cent. of the latter amount came from Sumatra.

Owing to favourable weather conditions the crop has been generally satisfactory. The bulk of the production is Robusta coffee.

Tea.

The planted estate area was 138,388 hectares, of which 104,415 hectares (75.5 per cent.) are in Java. A total of 136,937 hectares (99 per cent.) is in bearing. No native-owned tea is grown outside Java, where the planted area was 74,539 hectares, of which 73,287 hectares are in bearing and 410 hectares have been abandoned. These latter figures are liable to revision.

The total estate production, including 13,293 tons dry-weight of purchased native-grown leaf to the value of Gs. 4,531,608, was 83,159 tons.

The total exports were: Java 58,777, Outer Provinces 14,764, total 73,541 tons.

Tobacco.*

The crop of the superior grade of leaf for cigar wrappers, which is confined to the East Coast of Sumatra, amounted to 13,763 tons. In Java the estates produced 14,306 tons of inferior leaf-tobacco, 61 tons of which were purchased native-grown leaf, and 10,933 tons of crude tobacco, 3,923 tons of which were made from native-grown leaf.

There is also a large native output, mainly for home consumption; in Java this production was 62,700 tons. No figures are given of exports, but in 1938 6,105 tons of the Java production of 66,100 tons were exported.

Cinchona.

The 1939 estate production of dried cinchona bark was 12,391 tons. The total planted estate area was 17,049 hectares, of which 14,817 hectares are in bearing The exports of native-grown bark were 161 tons dry-weight, with an average quinine content of 4.46 per cent. and a quinine equivalent of 7,182 kilograms. The Bandoeng quinine factory also purchased 28.5 tons of native-grown bark with an average quinine content of 3.57 per cent. and a quinine equivalent of 915 kilograms.

The total exports from the Netherlands Indies in 1939 were: dry bark 6,394 tons, quinine, crude and quinine salts 163,348 kilograms.

The customary concise review of the present situation in respect of production in other tropical countries is given.

Oil Palm Products.

Of a total planted area of 105,093 hectares 76,015 hectares are in bearing. It is noteworthy that for 1938 the figures were respectively 92,307 and 74,490 hectares, and the increase in the planted area in 1939 has not been equalled during the last five years.

Production amounted to 243,683 tons of oil (palm oil and kernel oil combined) and 53,766 tons of kernels. Exports were respectively 231,576 and 43,805 tons.

Of the total planted area 94,502 hectares (90 per cent.) are in North Sumatra, where the average yield of palm oil per hectare in bearing is 3,275 kilograms. This high yield is mainly due to the high oil percentage and low kernel percentage of the fruits in Sumatra and to the high degree of efficiency of the oil extraction process there.

The Netherlands Indies in 1939 contributed 44.7 per cent. to the world's exports of palm oil and 7.2 per cent. to those of kernels. World palm oil exports have risen from 266,996 tons in 1930 to 518,185 tons in 1939, and this increase

* The particular features of the cultivation of this crop and of its preparation for export were fully described in Vol. XXII (1934) of this Journal.

of 251,189 tons is largely due to the increase in the production of North Sumatra alone of 184,996 tons during that period. In 1930 this production figure was 46,767 tons; in 1938 it was 217,841 tons, and in 1939 it was 231,763 tons. This relatively small region is now a bigger exporter of palm oil than the whole of Africa, which exports 225,942 tons.

Coconuts.

The estate area in bearing is: Java 6,365 hectares, and Outer Provinces 33,974 hectares, a total of 40,339 hectares which in 1939 produced 40,520 tons copra equivalent, inclusive of 669 tons of copra purchased from the native growers.

Although native production in Java and Madura is large, there was no export surplus in 1939; on the contrary in that year there was an import of about 50,000 tons copra equivalent, almost exclusively from the Outer Provinces. The production of copra by the native growers in Java and Madura is estimated to have been 191,500 tons, all of which went to the local oil mills to satisfy domestic consumption. This figure does not include direct domestic consumption of nuts and oil extraction in the small native village oil mills.

The export surplus from the Outer Provinces in 1939 was 528,760 tons of copra, including 34,766 tons of estate produce, leaving a net balance of 493,994 tons. The total Netherlands Indies exports of copra, oil and coconuts amounted to 544,381 tons copra equivalent.

Essential Oils.

The estate area planted with citronella was 6,345 hectares, of which 5,841 hectares were in bearing; the crop from 5,619 hectares only was harvested. Only 26 hectares of this area were outside Java. The native-owned area in Java was 24,348 hectares, of which 21,047 hectares were in bearing.

Estate production was 379,086 kgs. of oil from estate-grown leaf and a further 350,952 kgs. of leaf, purchased from native growers, giving a total of 730,038 kgs. of oil. The total export to foreign countries was 2,508,734 kgs. of oil, leaving 1,778,696 kgs. to native distillers.

Exports of other essential oils were: cajeput oil 48,132 kgs., vetiver oil 24,627 kgs. of oil and 36,308 kgs. of dried root, patchouli oil 18,285 kgs. of oil and 180,574 kgs. of dried leaf. The export of turpentine was 1,693,536 kgs.

Hard-Rope Fibres.

Chiefly sisal, grown on estates. The total export, not including refuse, was 105,978 tons. Other fibres 2,665 tons, waste 3,411 tons.

Kapok.

The bulk of the exports of this predominantly native-grown crop comes from Java. Total exports were:

	Fibre tons	Seed tons	Oil tons	Oilcake tons
	21,786	11,144	6,539	21,170
of which estates produce: ...	2,133	3,913	nil	nil

Only *Ceiba pentranda* L. Gaertn. is cultivated.

Pepper.

Cultivation is almost entirely in the hands of native and Chinese growers. The 1939 exports were:

	Black tons	White tons	Total tons
Sumatra	53,169	950	54,119
Banka and Billiton	595	11,825	12,420
Borneo	81	3,353	3,434
	53,845	16,128	69,973

Tapioca.

This crop is almost exclusively grown by natives in Java for domestic consumption and only a small surplus is available for export in its various forms.

In 1939 the planted native area was 992,000 hectares, the largest ever recorded, and produced the record crop of 8,311,000 tons of fresh tubers. Only 633,000 tons were available for export.

To the figures for planted area and production those relating to estate cultivation for flour manufacture should be added, but they are relatively insignificant. The 1939 exports of tapioca products were (in tons):— dried tubers 3,619; dried and ground tubers 55,579; flour 200,274; flake and siftings 8,260; pearl and seeds 11,931; fibre residue 5,836.

Coca.

This is exclusively an estate crop, exported as leaf. In 1939 production was 143,290 kgs. of leaf.

Derris Root.

The planted estate area further increased to 5,234 hectares, of which 3,395 hectares are in Java and 1,839 hectares in the Outer Provinces. Of the total area 1,264 hectares were in bearing, which produced 587 tons of root, 571 tons of which were exported.

Gambier.

This crop is mostly native grown in the Outer Provinces only. The planted estate area there was 1,748 hectares, of which 1,739 hectares were in bearing and

produced 3,262 tons. The total exports from the Outer Provinces amounted to 13,076 tons, of which 7,460 tons went to foreign countries; practically the entire balance went to Java for domestic consumption.

Nutmegs.

No reliable figures for planted area, production and home consumption are available. The 1939 exports were 2,223 tons of shelled nuts, 1,991 tons of unshelled nuts, and 700 tons of mace. The produce comes chiefly from the Banda Islands group *via* Menado and from Celebes.

Arecanuts.

This is entirely a native crop. In 1939 exports from Java were 9,422 tons and from the Outer Provinces 48,313 tons, total 57,735 tons.

Cloves.

Exports from the producing regions in the Outer Provinces were: 373 tons to foreign countries and 631 tons to Java and to other parts of the Outer Provinces. In addition Java imported 8,659 tons from foreign countries, mainly from Zanzibar.

Rice.

Whereas Java up to 1936 had no export surplus, in that year for the first time there was an export of 96,299 tons of cleaned rice; in 1939 it was 133,987 tons. Most of it goes to the Outer Provinces, which in addition imported 235,210 tons from abroad.

Java in 1939 produced a new record crop of 4,180,290 tons of rice from a new record total planted area of 4,028,000 hectares or 15,445 square miles, nearly one third of the total area of the island.

Maize.

Maize is exclusively native grown, 74 per cent. on dry land and 26 per cent. on padi land in Java and Madura. It is also grown in Bali, Lombok and Celebes.

In Java and Madura this crop is grown chiefly for domestic consumption. The planted area in 1939 was 2,030,000 hectares; production was 1,985,200 tons of grain, with an export surplus of 56,158 tons (2.8 per cent.). For the Outer Provinces no production figure is given; the export surplus was 37,873 tons.

Groundnuts.

In 1939 the planted area in Java was 241,000 hectares and production was 181,500 tons of decorticated nuts, 68,254 tons of which were exported; 62 per cent. of the planted area was dry land and 38 per cent. was padi land.

The Outer Provinces had no export surplus in 1939.

Soya Beans.

In 1939 the planted area in Java was 342,912 hectares of padi land and 71,651 hectares of dry land, total 414,563 hectares. Production was 317,600 tons of dry beans, 8,158 tons of which were exported.

The Outer Provinces had no export surplus in 1939.

Sago.

In 1939 exports to foreign countries were 37,119 tons, almost exclusively from the East Coast of Sumatra and from Rhio and Dependencies.

Miscellaneous Crops.

The 1939 exports of a number of minor crops to foreign countries (in tons, unless otherwise stated) were:—

Cocoa	...	1,368	Ricinus seed, dried seed	...	6,541
Cinnamon	...	3,087	Sesamum, dried seed	...	3,835
Vanilla	...	5,874 kgs.	Cotton, lint cotton	...	402
Potatoes	...	1,852	Cotton, seed cotton	...	1,471
Chillies	...	2,393	Candlenuts	...	5,214
Onions	...	211	Illipe nuts	...	66
Vegetables, fresh	...	11,323	Benzoin gum	...	2,133
Vegetables, dried	...	403	Kratok seed	...	1,246
Fruit, fresh	...	7,438	Cubebs	...	141
Fruit, dried	...	116	Temulawak = *Curcuma*		
Fruit, canned	...	300	*Xanthorrhiza*	...	10
Tamarind	...	114	Kumis Kuching = *Orthosiphon*		
			grandiflora	...	49

For the first time this Report mentions the cultivation of *Aleurites* spp. for the extraction of tung oil. There are already a number of estates in Java and a few in the Outer Provinces with experimental areas planted with material supplied by the Government Experiment Stations. So far the planted area of 17 estates in Java at the end of 1939 was 978 hectares, and of 4 estates in the Outer Provinces was 13 hectares.

L. A. J. R.

Notes and Comments.

USE OF DERRIS IN THE WAR ON LICE.

Mr. Malcolm MacDonald, as Minister of Health, on 29th October 1940 stated:— "The most potent threat to us in the months that lie ahead will not be from the bomb and the parachute, but from the bug and parasite." *Picture Post* of 23rd November 1940 quotes Mr. MacDonald's words as an introduction to the second of a series of articles against epidemics under the caption "War on Lice."

It is pointed out that the louse is the carrier of typhus, trench fever and relapsing fever — three terrors which have destroyed whole armies. "The armies of the past died of typhus because they could not keep the pest down. To-day it is the civilian population that finds the task more difficult. There is over-crowding in the Underground; there is over-crowding in the public shelter. There are water supplies cut off and heating facilities destroyed. There is a greater movement of population than ever before, and all these things make cleanliness far more difficult."

The article indicates the use of specially prepared derris powder to combat the louse menace, and it is, of course, this aspect of the question which is of particular interest to Malaya.

Recent scientific literature on the subject indicates that investigations are proceeding with a number of insecticides, of which derris is one, but we have discovered no evidence that finality has been reached as a result of these investigations.

If in fact, derris is found to be the best insecticide in this connexion, the demand for the Malayan product would increase very rapidly, and it might well be that we should be unprepared for this increase in demand. We therefore cabled to London for advice on this subject asking whether we should be justified in advocating greatly increased planting to meet the expected future demands.

In reply to our enquiry we have received cabled advice to the effect that the present output of derris is being readily absorbed by the United States market and the trade expects that the ordinary civilian demands will increase. The army demands, although substantial, are at present for only a small fraction of the total output, but these demands may increase if there is a campaign in typhus-infested countries.

We are further informed that while the Ministry of Health may require large quantities of derris if louse infection breaks out in air-raid shelters, it is not at present much used against lice and there are a good many efficient alternatives to derris. Any derris which is used for new purposes must, however, come out of stock and be replaced when newly-planted derris can be harvested, *i.e.* in 18 months to 2 years from planting. In all the circumstances, a moderate increase in planting would probably be advisable, but it must be clearly understood that while offering this advice, the Government accepts no responsibility for finding a market for the increased output.

REVIEW BY H.E. THE GOVERNOR AND HIGH COMMISSIONER ON THE MALAYAN WAR EFFORT.

In the course of a broadcast speech from the Singapore station on 30th March 1941 H.E. the Governor and High Commissioner made the following remarks.

"As regards rice, we have built or are building six mills and godown accommodation for some ¼ million tons, in addition to large storage space which has been rented. Most of the work is already finished.

We have also adopted a scheme whereby rice, as it is milled, is mixed with lime so that it remains fresh and sweet for — well, say for two years.

This, of course, means an immense saving in storage space as 5 tons of rice are the equivalent of 8 tons of padi.

I am glad to say that the area under padi in the season 1939-40 was 42,000 acres more than in the year before, and the latest forecast for the present season suggests a further increase in nearly all the important areas of production.

The area under rice substitutes such as tapioca, sweet potatoes, maize, sugar cane, etc. has increased by some 14,000 acres, tapioca showing the biggest increase.

As regards fresh vegetables, in 1940 market-gardens covered 15,000 acres as compared with 8,500 acres in 1939. But we want still more.

It should not be necessary for Singapore to have to import large quantities of fresh vegetables from abroad and there is no reason at all why Malaya should not be self-supporting at least in respect of most vegetables consumed by Asiatics.

We hope also to start the canning of vegetables very soon, and perhaps of jam. Experiments have shown that this can be done, and the quality is excellent.

Meat, unfortunately, we are unable to can, so we are going in for a live meat reserve instead.

The purchase of cattle has already commenced, and grazing areas sufficient to take several thousand head have been set aside and are being fenced in the various States and Settlements.

It is quite possible that this war measure, like the scheme for liming rice, may prove to be of permanent value to Malaya.

By the licensing of dealers in rice and certain other foodstuffs we have taken a preliminary step which is essential to a system of rationing if that should ever prove to be necessary.

I do not say that it will be necessary, and no one must jump to conclusions and imagine that I mean more than I say. All that we are doing is to look ahead and to try to be prepared, which seems to me to be ordinary common sense, and moreover should give confidence to the public."

Departmental.

FROM THE DISTRICTS.

Compiled in the Office of the Chief Field Officer from Monthly Reports of Agricultural Officers.

March, 1941.

The Weather.

In western areas the weather has been moderately wet, rainfall approximating to normal. In Kelantan and Pahang, and in Johore to a lesser extent, it has been extremely dry. In Kelantan over a period of 7 weeks only 1½ to 2 inches of rain fell.

Crop Reports.

Rubber.— Prices increased slightly, the maximum recorded being $45 per picul.

In most districts rubber trees have now regained their foliage after "wintering." *Oidium heveae,* leaf disease, seems to be less prevalent this year.

Padi.— Harvesting in Kedah is now almost completed. In North Krian the harvest is nearing completion. It is expected that the yield in this area will be 20 per cent. less than last year. In other parts of Krian and also in Central Perak the crop has been poor. The decrease is to some extent attributable to rat damage, the incidence of which has been mentioned in previous reports. Probably a factor of more importance was the lateness of planting. In the North Perak Circle the crop is generally fair. In areas which were planted late it is probable that the yield will be poorer. These late planted areas are those which, not being supplied with irrigation water, experienced dry conditions during last September. Work was therefore not started until late and was further held up by Puasa.

In the Sungei Manik area reaping is now over. A large number of harvesters came in from the Bagan Datoh area and from the riverine mukims. These people received 20 per cent. of the crop in payment and they were also supplied with food.

In the Panchang Bedena area of Selangor harvesting is in progress and the crop is reported to be moderately good.

In Kelantan a good crop is being harvested and it is expected that the total yield will exceed that of last season.

In Kuala Pilah District, Negri Sembilan, a larger area than last year has been cultivated. Even so 2,000 acres remained unplanted owing to lack of an adequate water supply.

Coconuts.— The high cost of lorry transport has added further to the difficulties of the small-holders in the Bagan Datoh area. Many of these small-holders went to Sungei Manik to work as harvesters. Others have turned their attention to making ataps as this is at present quite a profitable trade.

Statistical.

MARKET PRICES.

March, 1941.

Rubber.— There was a sharp advance in the Singapore price of rubber during the month. No. 1 X. Ribbed Smoked Sheet opened at 36⅜ cents per lb. and advanced steadily to 38⅞ cents on the 26th March, easing slightly to close at 38⅝ cents.

The average of daily quotations for the month was 38.06 cents per lb., as compared with 36.36 cents in February. The London average price was 13.91 pence per lb., and New York 21.99 cents gold, as compared with 12.73 pence and 20.29 cents gold in February.

Prices paid for small-holders rubber at three centres during the month are given in Table 1.

Table I.

Weekly Prices Paid by Local Dealers for Small-Holders' Rubber, March, 1941.

(Dollars per picul of 133 1/3 lbs.)

Grades	Kuala Kangsar, Perak				Kuala Pilah, Negri Sembilan				Batu Pahat, Johore.			
	5	12	19	26	6	13	20	27	5	12	19	26
Smoked Sheet ...	—	42.60	43.30	—	43.48	—	44.80	—	—	43.40	—	—
Unsmoked Sheet ...	40.00	40.00	42.00	40.00	41.00	41.00	41.50	43.70	40.00	41.00	41.00	42.20
Scrap ...	—	—	—	—	30.00	—	—	—	—	—	—	—

Transport by F.M.S.R. lorry service Kuala Pilah to Seremban 12 cents per picul, to Malacca excluding duty, 25 cents per picul, by rail Seremban to Penang $1.24 per picul, Seremban to Singapore $8 per ton.

Transport from Batu Pahat to Singapore by lorry, excluding duty, 90 cents per picul.

Transport from Kuala Kangsar to Prai by railway $6.20 per ton.

At Kuala Pilah the standard deduction for moisture in unsmoked sheet is 5 per cent.

Table II.

Singapore Prices of Various Agricultural Products.

Product	March, 1941			Feb. 1941	Average Price 1940
	Highest	Lowest	Average	Average	
	per picul $	per picul $	per picul $	per picul $	per picul $
Copra :					
Sundried ...	2.50	2.50	2.50	2.47	3.08
Mixed ...	2.25	2.25	2.25	2.22	2.76
Coconut Oil ...	—	—	7.50	7.00	8.29
Copra Cake No. 1 ...	‡	‡	‡	2.00	1.43
No. 2 ...	1.60	1.60	1.60	1.60	‡
Pineapples, Canned :*					
G.A.Q. : Cubes ...	4.85	4.85	4.85	4.85	4.85
Sliced ...	4.80	4.80	4.80	4.80	4.80
Tall ...	4.95	4.95	4.95	4.95	4.95
Golden : Cubes ...	5.45	5.45	5.45	5.45	5.45
Sliced ...	5.40	5.40	5.40	5.40	5.40
Tall ...	5.55	5.55	5.55	5.55	5.55
Coffee :					
Liberian ...	15.50	15.50	15.50	15.50	16.10
Excelsa ...	12.50	12.50	12.50	12.50	13.69
Robusta ...	9.50	9.00	9.25	9.00	8.92
Palembang ...	18.25	16.50	16.69 — 18.06	17.50—18.81	13.00†
Sourabaya ...	19.25	17.50	18.00 — 19.12	16.31—17.31	14.80†
Arecanuts :					
Best ...	6.40	6.30	6.36	5.92	5.65
Medium ...	6.00	5.75	5.85	5.63	5.24
Mixed ...	5.50	5.25	5.35	5.04	4.88
Splits ...	7.75	5.50	5.62 — 7.62	4.44— 5.69	6.33†
Red Whole ...	8.50	6.00	6.12 — 8.12	4.81— 5.81	6.67†
Sliced ...	10.50	8.50	8.56 — 10.37	8.06—10.31	10.79†
Pepper :					
Singapore Black ...	7.00	7.00	7.00	6.62	7.29
Singapore White ...	14.00	13.50	13.80	13.06	‡
Muntok White ...	14.50	14.00	14.30	13.50	13.51
Nutmegs :					
110's ...	24.00	24.00	24.00	23.50	26.11
80's ...	24.50	24.50	24.50	24.00	30.65
Penang, dried¶ ...	—	—	16.00	‡	21.00
Mace :					
Siouw ...	‡	‡	‡	‡	‡
Amboina ...	‡	‡	‡	38.50	39.85
Penang, dried¶ ...	—	—	40.00	‡	63.50
Cloves :					
Zanzibar ...	40.00	40.00	40.00	41.75	‡
Amboina ...	42.00	42.00	42.00	43.25	‡
Penang, dried¶ ...	‡	‡	‡	‡	72.00

* per case of 48 cans of 1½ lbs. each. † Highest of the average monthly range quotations.

¶ Penang prices. ‡ Not quoted

Product	March, 1941			Feb. 1941	Average Price 1940
	Highest	Lowest	Average	Average	
	per picul $	per picul $	per picul $	per picul $	per picul $
Gambier :					
Block ...	‡	‡	‡	‡	‡
No. 1 Cube ...	14.50	14.50	14.50	14.06	15.00
Sago :					
Pearl ...	9.00	8.00	8.50	7.64	7.79
Flour, Sarawak Fair ...	4.50	4.50	4.50	4.31	4.95
Tapioca :					
Flake Fair ...	7.00	6.30	6.84	6.25	8.08
Seed Pearl ...	8.25	7.75	8.05	7.40	9.45
Medium Pearl ...	8.25	7.50	7.95	7.31	9.07

Palm Oil.— No information is available regarding the price of Malayan palm oil in the United Kingdom.

Local sales of palm oil in sellers' drums were made during March at the following prices per ton :—

	f.f.a. per cent.	$	
Unbleached Oil ...	5	130.00	f.o.b. Singapore
	5	125.00	,, ,,
	6	123.00	,, ,,

Rice.— The Singapore average wholesale prices of rice per picul in February were as follows :— Thailand 3rd Grade "A" $6.92, Thailand Broken 1st Grade "A" $6.42, Thailand Broken 2nd Grade "A" $6.17, Burma S.Q. Meedone $7.17, Burma Parboiled Milchar No. 2 $5.67, Annam White Rice No. 1 $6.42. Corresponding prices for March were: $6.92, $6.61, $6.36, $6.61, $5.28 and $6.42 respectively.

The January average retail prices of No. 2 Thailand rice were not quoted.

The average declared trade value of imports during January was $6.47 per picul, as compared with $5.91 in December and $5.47 in November.

Padi.— The Government Rice Mills, Perak, are paying a guaranteed price of $2.50 per picul for padi, plus a bonus of 10 cents per picul for pure strain S.K. 48 padi. There were no purchases of padi at the Government Rice Mill, Temerloh, Pahang.

Retail prices of padi in cents per gantang (gallon) were as follows :— Kedah 9½, Province Wellesley and Penang 11¾, Perak, Krian 9 to 11, Perak Central 12 to 18, Perak South 10 to 20, Pahang 15 to 22, Kelantan 12½.

Tea.— There are no London tea sales.

The latest Colombo prices available, quoted from *The Ceylon Tea Market Report* of 18th March 1941 of the Colombo Broker's Association are as follows,

in rupee cents per lb.: High Grown Rs. 1.20, Medium Grown Rs. 1.02, Low Grown 92.

Cardamoms.— Green cardamoms were quoted in *The Ceylon Chamber of Commerce Weekly Report* of 24th March 1941 from Rs. 1.95 to Rs. 2.26 per lb.

Derris.— There was a fair enquiry for derris during the month, but no alteration in price levels. Average prices per picul were: $9.50 to $11 for roots sold on a basis of ether extract; $18 to $22.50 for roots with 4 to 5 per cent. rotenone content, rising to $27 to $28.50 for 7 to 9 per cent. rotenone.

Tobacco.— Prices of prepared tobacco per picul in Kelantan were: 1st quality $100 to $110, 2nd quality $70 to $90, 3rd quality $50 to $80. Prices of dried leaf per picul were as follows:— Perak Central 1st quality $45 to $48, 2nd quality $25 to $39, $15 to $28; Perak South $45 to $50, $40 to $45, $30 to $40, prepared $1 per kati; Penang and Province Wellesley $42, $25, $18; Kedah $38 to $40; Selangor (Kuala Langat) $1.20 per kati cut tobacco.

The above prices are based on London and Singapore daily quotations for rubber, on the Singapore daily prices for copra, on the Singapore Chamber of Commerce Weekly Reports for the month and on other local sources of information. Palm oil reports and certain coffee prices are kindly supplied by Guthrie & Co., Ltd., Kuala Lumpur, local palm oil prices by Whittall & Co., Kuala Lumpur, the Singapore prices of imported coffee and arecanuts by Lianqui Trading Company of Singapore, and Singapore derris prices by Hooglandt & Co., Singapore.

1 picul = 133 1/3 lbs. The dollar is fixed at 2s. 4d.

Note.—The Department of Agriculture will be pleased to assist planters in finding a market for agricultural produce. Similar assistance is also offered by the Malayan Information Agency, 57, Trafalgar Square, London, W.C.2.

DEPARTMENTAL NOTES.

Leave.

Mr. H. D. Meads, Personal Assistant to the Adviser on Agriculture, returned from leave on the 31st March 1941, and resumed duty on the 1st April.

Mr. A. Thompson, Senior Plant Pathologist, has been granted 164 days leave from 17th March to 27th August 1941 inclusive. Mr. R. A. Altson, Plant Pathologist, will act as Senior Plant Pathologist during Mr. Thompson's absence.

FERTILIZER PRICES, APRIL, 1941.

The following are the prices current for the month of April 1941 of the more important fertilizers of which stocks are available.

	per ton $	
Nitrate of soda	125	
Muriate of potash	200	
Rock phosphate (Christmas Island)	37	($35 Singapore).
Lime	20	

Quotations are *ex* warehouse, Port Swettenham, Klang, Singapore and Penang.

Supplies of sulphate of ammonia, superphosphate, basic slag, calcium cyanamide, sulphate of potash, and rock phosphate (Gafsa) are not available.

MALAYAN PRODUCTION OF PALM OIL AND KERNELS

(In long tons, as declared by Estates)

Month 1941	Palm Oil			Palm Kernels		
	F.M.S.	U.M.S.	Malaya	F.M.S.	U.M.S.	Malaya
January	1,872.7	1,221.4	3,094.1	170.3	150.0	320.3
February	1,698.3	993.2	2,691.5	167.1	179.3	346.4
Total	3,571.0	2,214.6	5,785.6	337.4	329.3	666.7
Total January/ February, 1940 ...	3,945.5	4,388.7	8,334.2	845.4	951.0	1,796.4
Total for the year, 1940	29,875.2	28,096.9	57,972.1	4,513.1	5,098.1	9,611.2

Stocks on estates as at 28th February 1941 were: palm oil 3,128 tons, palm kernels 596 tons.

ACREAGES OF TAPPABLE RUBBER ACTUALLY TAPPED AND NOT TAPPED ON ESTATES OF 100 ACRES AND OVER, FOR THE MONTH ENDING 28TH FEBRUARY, 1941.

STATE OR TERRITORY	Estimated Acreages of Tappable Rubber (9)+(11)	ACREAGES OF TAPPABLE RUBBER NOT TAPPED				Area of tappable rubber never been tapped (b)		Total area not tapped (3)+(5) (c)		TOTAL AREA TAPPED DURING THE MONTH		Area of tappable rubber rested under rotational systems (c)	
		On estates which have entirely ceased tapping		On estates which have partly ceased tapping (a)									
		Acreage	Percentage of (3) to (2)	Acreage	Percentage of (5) to (2)	Acreage	Percentage of (7) to (2)	Acreage	Percentage of (9) to (2)	Average	Percentage of (11) to (2)	Acreage	Percentage of (13) to (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
S.S.—													
Province Wellesley ...	42,261	nil	nil	5,905	14.0	299	0.7	5,905	14.0	36,356	86.0	8,081	19.1
Malacca ...	111,690	309	0.3	8,668	7.7	522	0.5	8,977	8.0	102,713	92.0	16,213	14.5
Penang ...	2,595	63	2.4	604	23.3	35	1.3	667	25.7	1,928	74.3	60	2.3
Singapore ...	29,360	3,431	11.7	4,813	16.4	311	1.1	8,244	28.1	21,116	71.9	1,855	6.3
Total S.S. ...	185,906	3,803	2.0	19,990	10.8	1,167	0.6	23,793	12.8	162,113	87.2	26,209	14.1
F.M.S.—													
Perak ...	274,630	359	0.1	16,131	5.9	3,245	1.2	16,490	6.0	258,140	94.0	31,148	11.3
Selangor ...	303,069	1,118	0.4	13,345	4.4	2,295	0.8	14,463	4.8	288,606	95.2	31,734	10.5
Negri Sembilan ...	249,901	1,895	0.8	23,113	9.2	4,052	1.6	25,008	10.0	224,893	90.0	21,646	8.7
Pahang ...	85,345	5	0.0	8,005	9.4	2,719	3.2	8,010	9.4	77,335	90.6	4,395	5.1
Total F.M.S. ...	912,945	3,377	0.4	60,594	6.6	12,311	1.3	63,971	7.0	848,974	93.0	88,923	9.7
U.M.S.—													
Johore ...	468,799	5,053	1.1	42,572	9.1	20,424	4.4	47,625	10.2	421,174	89.8	49,494	10.6
Kedah ...	194,083	4,928	2.6	8,198	4.2	3,705	1.9	13,126	6.8	180,957	93.2	25,474	13.1
Kelantan ...	30,419	403	1.3	4,230	13.0	999	3.3	4,633	15.2	25,786	84.8	3,290	10.8
Trengganu (d) ...	4,817	nil	nil	nil	nil	nil	nil	nil	nil	4,817	100.0	1,535	31.9
Perlis (e) ...	1,260	nil	nil	202	16.0	90	7.1	202	16.0	1,058	84.0	194	15.4
Brunei ...	6,178	nil	nil	1,418	23.0	288	4.7	1,418	23.0	4,760	77.0	884	14.3
Total U.M.S. ...	705,556	10,384	1.5	56,620	8.0	25,506	3.6	67,004	9.5	638,552	90.5	80,871	11.5
Total MALAYA ...	1,804,407	17,564	1.0	137,204	7.6	38,984	2.2	154,768	8.6	1,649,639	91.4	196,003	10.9

Notes.—(*a*) Area out-of-tapping on estates which have partly ceased tapping refers to areas definitely being rested and excludes areas on any tapping round.

(*b*) The acreage shown in column (7) is included in columns (3) and (5).

(*c*) Areas of tappable rubber rested under rotational systems are not considered as out-of-tapping and therefore columns (11) and (12) include columns (13) and (14) respectively.

(*d*) Registered companies only.

ACREAGE, STOCKS, PRODUCTION, IMPORTS AND EXPORTS OF RUBBER, INCLUDING LATEX, CONCENTRATED LATEX AND REVERTEX, FOR THE MONTH OF FEBRUARY, 1941, IN DRY TONS.

State or Territory	Stocks at beginning of month 1			Production by Estates of 100 acres and over		Production by Estates of less than 100 acres estimated 2		Imports				Exports including re-exports				Stocks at end of month			Consumption 3	
								during the month		January & Feb. 1941		during the month		January & Feb. 1941						
	Ports	Dealers	Estates of 100 acres and over	during the month	Jan. & Feb. 1941	during the month	Jan. &Feb. 1941	Foreign	From Malay States	Foreign	From Malay States	Foreign	Local	Foreign	Local	Ports	Dealers	Estates of 100 acres and over	during the month	Jan. & Feb. 1941
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
MALAY STATES :—																				
Federated Malay States ...	...	4,469	19,086	15,845	33,251	6,660	15,612	Nil	Nil	Nil	Nil	10,314	6,885	25,272	20,935	...	7,645	21,082	134	283
Johore ...	...	2,003	6,998	7,620	14,687	4,160	11,200	Nil	1	Nil	20	1,104	8,815	4,830	19,386	...	3,110	7,753	...	...
Kedah ...	...	566	4,693	3,690	8,103	1,440	3,424	Nil	Nil	Nil	Nil	1,050	3,763	2,472	8,532	...	562	5,014	...	...
Perlis ...	...	27	25	18	38	24	61	Nil	Nil	Nil	Nil	Nil	40	Nil	111	...	23	31	...	...
Kelantan ...	...	215	420	422	865	668	1,217	Nil	Nil	Nil	Nil	57	831	212	1,756	...	348	489	...	...
Trengganu ...	...	48	111	211	396	299	636	Nil	Nil	Nil	Nil	Nil	379	5	899	...	107	183	...	...
Brunei ...	...	5	43	62	138	129	209	...	...	...	...	...	180	...	332	...	9	50	...	...
Total Malay States	...	7,333	31,376	27,868	57,478	13,380	32,359	Nil	1	Nil	20	12,525	20,893	32,791	51,951	...	11,804	34,602	134	283
S. SETTLEMENTS :—																				
Malacca ...	...	2,724	1,778	1,581	3,302	692	1,770	Nil		Nil		1,618		5,425		...	2,627	1,698	...	...
Province Wellesley	...	2,754	904	571	1,266	286	571	Nil		Nil		9,098		20,249		...	3,499	930	...	...
Penang ...	3,104	5,449	20	21	49	76	229	1,892	20,723	3,937	49,654		Nil		Nil	2,172	6,685	17	...	...
Singapore ...	7,733	20,877	290	185	356	143	241	18,368		43,246		24,019		53,433		13,465	24,591	296	24	49
Labuan ...	...	19	Nil	Nil	Nil	Nil	33	64		126		Nil		Nil		...	39	Nil	...	...
Total Straits Settlements ...	10,837	31,823	2,992	2,358	4,973	1,216	2,844	20,324	20,723	47,309	49,654	34,735	Nil	79,107	Nil	15,637	37,441	2,941	24	49
Total Malaya ...	10,837	39,156	34,368	30,226	62,451	14,596	35,203	20,324	20,724	47,309	49,674	47,260	20,893	111,898	51,951	15,637	49,245	37,543	158	332

TABLE II
DEALERS' STOCKS, IN DRY TONS 3

Class of Rubber	Federated Malay States	S'pore	Penang	P.We'sly M'cca, Labuan & Brunei	Johore	Kedah
22	23	24	25	26	27	28
DRY RUBBER	6,295	23,206	6,228	5,537	1,926	356
WET RUBBER	1,350	1,385	457	637	1,184	206
TOTAL ...	7,645	24,591	6,685	6,174	3,110	562

TABLE III
FOREIGN EXPORTS

PORTS	For month	Jan. & Feb. 1941
29	30	31
Singapore ...	31,069	73,199
Penang ...	11,504	26,010
Port Swettenham.	4,465	12,467
Malacca ...	222	222
TOTAL ...	47,260	111,898

TABLE IV
DOMESTIC EXPORTS 4

AREA	For month	Jan. & Feb. 1941
32	33	34
Malay States ...	33,390	84,643
Straits Settlements	3,195	7,302
MALAYA ...	36,585	91,945

Notes:—

1. Stocks on estates of less than 100 acres and stocks in transit on rail, road or local steamer are not ascertained
2. The production of estates of less than 100 acres is estimated from the formula : Production + imports + Stocks at beginning of month = Exports + Stocks at end of month, + Consumption, *i.e.*, Column [7] = Columns [13] + [14] + [17] + [18] + [19] + [20] —[2]—[3]—[4]—[5]—[9]—[10]. For the Straits Settlements the production of estates of less than 100 acres is represented by sales or exports as shown by cess paid.
3. Dealers' stocks in the Federated Malay States are reduced to dry weights by the following fixed ratios: unsmoked sheet, 15% wet sheet, 25% scrap, lump, etc., 40%; stocks elsewhere are in dry weights as reported by the dealers themselves.
4. Columns (33) and (34) represent exports of rubber subject to regulation which, for Singapore and Penang Islands are represented by sales or exports as shown by cess paid.
5. All statements are brought up to date monthly, and any inaccuracies that may be disclosed are corrected in the totals; the latest publication therefore, is always the most reliable.
6. The above, with certain omissions, is the Report published by the Registrar-General of Statistics, S.S and F.M.S., at Singapore on 26th March, 1941

METEOROLOGICAL SUMMARY, MALAYA, FEBRUARY, 1941.

Locality.	Air Temperature in degrees Fahrenheit							Earth Temperature		Rainfall								Bright Sunshine.		
	Means of			Absolute Extremes						Total.		Most in a day.	Number of days.					Total.	Daily Mean.	Per cent.
	A. Max.	B. Min.	Mean of A and B	Highest Max.	Lowest Min.	Lowest Max.	Highest Min.	At 1 foot	At 4 feet			Amt.	Precipitation .01 in or more	Precipitation .04 in or more	Thunder-storm	Fog morning obs.	Gale force 8 or more			
	°F	°F	°F	°F	°F	°F	°F	°F	°F	in.	mm.	in.						hrs.	hrs.	
Kuala Lumpur Aerodrome Selangor ...	93.1	72.6	82.9	†	†	†	†	85.0	85.9	5.70	144.8	†	16	15	3	3	1	205.15	7.33	61
Port Swettenham Aerodrome, Selangor ...	90.6	71.8	81.2					86.1	85.7	10.17	258.3		13	13	6	—	—	228.35	8.15	68
Sitiawan, Perak ...	89.8	73.4	81.6					84.0	84.4	4.70	119.4		10	9	3	—	—	227.10	8.11	68
Ipoh Aerodrome, Perak ...	91.8	72.6	82.2					84.1	84.7	5.32	135.1		15	12	3	—	—	224.00	8.00	67
Temerloh, Pahang ...	90.7	72.7	81.7					86.2	86.1	2.12	53.8		9	7	2	11	—	216.75	7.74	65
Kuala Lipis, Pahang ...	89.7	72.3	81.0					83.9	84.5	1.57	39.9		8	7	—	20	—	200.00	7.14	59
Kuala Pahang, Pahang ...	85.1	75.7	80.4					85.1	85.7	11.37	288.8		10	10	—	—	1	216.85	7.74	65
Kallang Aerodrome, S'pore ...	87.9	75.4	81.7					83.7	84.3	2.70	68.6		8	6	2	—	—	231.90	8.28	68
Bayan Lepas Aerodrome Penang ...	88.7	74.7	81.7					85.1	85.3	3.50	88.9		10	7	1	—	—	229.60	8.20	69
Malacca Town, Malacca ...	89.1	74.4	81.7					84.3	84.8	6.46	164.1		10	6	4	—	2	239.00	8.53	70
Kluang, Johore ...	89.4	72.4	80.9					82.0	82.2	1.81	46.0		12	9	—	7	—	208.75	7.45	61
Mersing, Johore ...	84.7	74.3	79.5					82.2	81.9	6.94	176.3		10	10	1	—	—	230.75	8.24	68
Alor Star, Kedah ...	91.3	72.3	81.8					84.4	85.7	4.11	104.4		10	10	1	—	1	235.15	8.40	71
Kota Bahru, Kelantan ...	87.0	72.5	79.7					82.6	83.1	8.00	203.2		9	8	—	4	1	234.20	8.36	70
Kuala Trengganu, Trengganu	86.3	73.0	79.7					82.7	83.7	8.41	213.6		12	10	—	9	1	234.25	8.37	70
Labuan ...	88.3	77.3	82.8					89.8	88.7	2.76	70.1		4	3	—	—	—	273.50	9.77	81
HILL STATIONS.																				
Fraser's Hill, Pahang 4268 ft.	73.2	62.5	67.9					72.5	72.2	3.48	88.4		13	12	—	21	—	169.80	6.06	51
Cameron Highlands, Tanah Rata, Pahang 4750 ft. ...	74.0	56.0	65.0					70.2	69.6	5.32	135.1		15	13	—	—	4	194.20	6.93	58
Cameron Highlands, Rhododendron Hill, Pahang 5120 ft. ...	74.8	59.6	67.2					*	*	5.58	141.7		12	11	—	—	4	199.25	7.12	51

* Not recorded.